

Activation of Learning and Creative Activity of the Vocational Pedagogical University Students

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ABSTRACT

The relevance of the problem under study is based on the society's demand for training students - future professional training teachers ready to solve in a creative manner a wide range of professional and pedagogical tasks, as well as to develop professionally-oriented creative work in the process of training; it is also caused by the insufficient extent of the prior research within the vocational training theory of scientific and methodological mechanisms required for implementing this process. The purpose of the article is to develop a conceptual structural model of professionally-oriented learning and creative activity of the vocational pedagogical university students. Leading method for studying this problem is modelling which allows to consider this problem as the process of goal-oriented and deliberate acquiring by future professionals the creative approaches to implementation of professional activity. The article presents a structural model of learning and creative activity of vocational pedagogical university students, justifies the necessity to single out in the structure of the students' learning and creative activity three interconnected components (creative, professional-pedagogical and personal-acmeological), proves the productivity of activating the learning and creative activity of the vocational pedagogical university students by organizing it as quasi-professional process of searching and solving professional tasks which are subjectively and objectively new, on the basis of using synectics including association methods of activating creative thinking integrated into the its structure. The article can be useful for teachers within the vocational and pedagogical education system, as well as for professionals who develop creative abilities of students based on the heuristic creativity methods.

KEYWORDS

Associative-synectic technology, learning and creative activity of students, professional creative work, synectics, vocational and pedagogical activity

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Introduction

The process of constant improvement and update of the Russian education brings to focus the problem of methodological support for the creative component of future baccalaureates' training (Derkach, 2013). This is especially important for vocational pedagogical universities as their alumni – vocational training teachers are responsible for creative atmosphere in vocational pedagogical universities and organizing everyday work on improving the creativity of

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students. Taking into account the goals of vocational education, students' creativity should be aimed at their future professional activity (Kubrushko, 2001; Tkachenko, 2006; Romantsev, 2001; Masalimova & Chibakov, 2016). Thus, level and professional direction of future teachers' creative training influence the development of creative abilities and formation of creative competency not only of them but also of those future industrial workers who will have initial and secondary-level vocational education as a result of pedagogical activity of vocational pedagogical universities' alumni.

The pedagogical system of developing creativity of vocational pedagogical university students that was established in the 1980s – the 1990s was quite effective (Tkachenko, 2006; Novoselov, 1997). But experience has proven that the system was not always successful in directing the creativity of future professionals towards their future profession which resulted in the necessity to study the problem of activating learning and creative activity of students as it is aimed at professional-pedagogical activity tasks.

Generalization of famous approaches to understanding the process of developing professional creativity (Zinovkina, 2002; Krayukhina & Novoselov, 2008; Shmakova & Novoselov, 2008; Gabdrakhmanova, Kalimullina & Ignatovich, 2016), as well as development of innovative activity in teaching profession have made it possible to define the vocational training teachers' professional creativity of as creative activity, based on their professional competency, aimed at predicting, judging and analyzing situations of a new type in the sphere of professional-pedagogical activity and searching for new creative solutions of professional tasks arising from such situations. Moreover, in accordance with the structure of professional-pedagogical activity and with acmeological understanding of a mature person's development process (acmeological dependency of professional level increase on the extent of individual and personal specifics in professional activity (Derkach, 2013), professional creativity of vocational training teachers has three specific aspects:

- creativity aimed at the sphere of professional, including production, activity of future students of initial and secondary-level vocational educational institutions (professional-creative component);
- creativity aimed at educational, teaching activity in the sphere of initial and secondary-level vocational education, that is, pedagogical creativity in the sphere of vocational education (professional-pedagogical component);
- creativity aimed at self-actualization and self-development characterized by its humanist nature and social significance, that is, at development of creative potential, as well as the best individual, personal, spiritual qualities of subjects of professional creativity (personal-acmeological component).

Transferring the identified specific nature of the vocational training teachers' professional creativity to the content of the notion of learning and creative activity of vocational pedagogical university students has allowed us to specify the essence of activating the learning and creative activity of students – future vocational training teachers. This is a pedagogically controlled process of increasing activity and proactivity of students in searching for and solving creative tasks linked to professional-pedagogical activity which requires increasing the level of comprehension and personal significance of a new situation proposed in each task with further changing either the situation or the attitude of students to this situation. This is helped by organizational and

methodological support of increasing the intensity of professional pedagogical education subjects' interaction – between themselves and with objects of educational medium in three interconnected components of the professional and pedagogical creativity - professional-creative, professional-pedagogical and personal-acmeological.

The analysis of the writings of A.A. Verbitsky (1991), M.M. Zinovkina (2002), P.F. Kubrushko (2001), F.T. Khamatnurov, M.M. Dudina & O.F. Chistik (2016) who studied various aspects of development of the professional component of the students' learning and creative activity as a type of learning activity showed the productivity of using the principles of *contextual training* for determining the pedagogical conditions for activating the students' learning and creative activity within the professional pedagogical education structure and developing the corresponding organizational-pedagogical and methodological support.

On the basis of dynamic modeling of professional activity's subject and social content aimed at transforming the student's learning activity into the professional activity of bachelor's degree holder, that was proposed by A.A. Verbitsky (1991), we suggest developing the learning and creative activity of future teachers of vocational training according to the following scheme:

learning component of the professionally-oriented learning and creative activity (in the form of lectures and seminars that describe the main regularities of creative activity and pass the information on heuristic methods, as well as on the tendencies and problems of innovative development of a specific professional sphere);

quasi-professional creative activity on rationalizing the objects of the professional environment (playing forms and independent work using the heuristic methods, organization of creative competitions);

prognostic-anticipatory quasi-professional creative activity (playing forms, executing individual and group projects based on searching and predicting new needs in changing known ones and creating new objects of the professional environment, organization of creative competitions and activities on practical approval of students' creative results);

professional objective socially significant creativity (development of original individual or group innovative projects and their implementation).

Materials and Methods

Research methods

The following methods were used during the research: theoretical (analysis of philosophical, psychological and pedagogical and special literature, modeling); empirical (classroom observation); experimental (questionnaire method, interviewing, analyzing the results of the students' learning and creative activity, teaching experiment, expert evaluation method); and non-parametric methods of mathematical statistics.

Experimental base of the research

Experimental and exploratory work was performed in the Russian State Vocational Pedagogical University and the Shadrinsk State Pedagogical Institute.

Research stages

The research was performed in four stages:

Stage 1 – studying the actual status and specifics of organization of learning and creative activity of vocational pedagogical university students (classroom observation, questionnaire method, interviewing etc.) and empirical search of methods and means of activating the students' learning and creative activity;

Stage 2 – analyzing psychological and pedagogical literature, defining theoretical approaches and the methodology of studying the problem of activating the students' learning and creative activity, identification of the main components of the process of developing their professional creativity (expert evaluation method, analysis of the creative activity's results etc.);

Stage 3 – specifying the pedagogical conditions and developing the scientific and methodological support of activating the students' learning and creative activity by organizing quasi-professional process of searching and solving professional tasks which are subjectively and objectively new on the basis of using synectics and associative-synectic technique. Experimental and exploratory work on checking several components of the model;

Stage 4 – experimental and exploratory check of the possibility to develop professional creativity of students from the level of activity determined by production necessity to the level of prognostic and anticipatory professional creativity. Confirming the possibilities of systemic use of conditions and organizational-pedagogical activities on activating learning and creative activity as new technique of developing the students' professional creativity. Conducting teaching experiment and processing using the non-parametric method of mathematical statistics "sign test"; analysis, interpretation and testing the research results.

Results

Structure and content of the model

The conceptual structural model of organizing the learning and creative activity as a pedagogical system with identification of professional-creative, professional-pedagogical and personal-acmeological components (Fig.1) is developed as the methodological landmark for implementing the proposed scheme of activating the professionally-oriented learning and creative activity of vocational training university students taking into account the identified specific features of the vocational training teacher's activity.

The structural model of organizing the learning and creative activity of vocational training university students as a pedagogical system includes the following interconnected and interdependent components: a) goals of developing a creative person and teaching the professionally-oriented creativity; b) methodology of developing the learning and creative activity; c) content of development of a creative person and teaching the professionally-oriented

creativity; and d) forms of organizing the individual creativity and co-creativity of students and teachers in the process of learning and creative activity.

Let us consider each of the model's components in its interconnection with the components of the supersystem within the process of activating the professionally-oriented learning and creative activity of vocational training university students.

The element of the learning and creative activity's goal is an internal structural element of the pedagogical system and greatly influences teachers and students. This element is formed under the influence of the social system on the basis of ideal requirements to cultural and professional training and depends on the general goals of education and training in a vocational pedagogical university. In the structure of the subsystem "Goals" are identified the goals which are specific for each component of the learning and creative activity.

The methodology of pedagogical activity allows us to generalize, using the scientific means, the experience accumulated by generations of teachers, experience of organizing education and training, as well as to identify main regularities and principles of pedagogical activity. Methodology of learning and creative activity's development as a subsystem is based on the general pedagogical principles that are standards in the pedagogical system of activating professionally-oriented learning and creative activity of vocational training university students. The principles include the following – the principle of natural conformity, the principle of availability, of humanization of workplace, of problematization, of scientific character of education, of consciousness and activity of education, of integrity of the pedagogical process. The general pedagogical laws and regularities are fundamental in the process of organizing the learning and creative activity and do not require special consideration, thus are not included in the model under discussion. Only the principles that are specific for each of the identified aspects and for each level of the learning and creative activity are included.

Having been created in accordance with the goals and as a result of teachers' activity, in accordance with the principles and norms of methodology, the content of education turns into a partially independent structural element of the model. The content becomes a subject of cognitive activity of a teacher, a mentor and students, a means of their practical activity and a means of managing the development of teachers and students exerting reverse influence on the goals and methodology.

The fourth component of the model of learning and creative activity of vocational training university students is various forms of organizing learning and creative activity.

The presented model of learning and creative activity of vocational training university students allows us to activate students' creative abilities exactly in the sphere of their future professional-pedagogical activity by searching for and solving new professional tasks based on using synektics including association methods of activating creative thinking integrated into the its structure.

		Education and training goals	PPA methodology	PPA content	Forms of organizing PPA
		↓	↓	↓	↓
Subjects of the educational process in vocational pedagogical university	Teachers and PPA masters	Learning and creative activity goals	Methodology of developing learning and creative activity	Content of learning and creative activity	Forms of organizing learning and creative activity
	Professional-creative component				
		Creating a cognitive base of professional creativity of students	Principle of interconnection of creative and cognitive activity. Method: brain-storming (BS), synectics	Information on the main regularities and methods of creative activity	Lectures, seminars, independent work
		Forming creative skills in profession (industry)	Principle of combining tasks known in the professional sphere and their solutions. Methods: associative, BS.	Analysis of information on professional environment development problems, searching for creative tasks and solving them	Business games, independent work, creative competitions
		Objectivization of students' professional creativity	Principle of objectivization of students' professional creativity. Methods: associative, synectics, theory of inventive problem solving	Searching for new creative tasks based on the prognosis of professional environment development problems and solving them	Individual and group creative projects within the apprenticeship, creative competitions
	Professional-pedagogical component				
		Forming the cognitive basis of professional creativity	Principle of interconnection of educational and creative activity	Information on innovative activity in pedagogy	Lectures, seminars, independent work
		Forming the skills of didactic creativity	Principle of combining components of the educational process	Searching for didactic tasks based on the synectic analysis of the PPA problems and solving them	Business games, independent work, creative competitions
		Developing the students' pedagogical creativity in the sphere of professional pedagogy	Principle of independent searching for new pedagogical tasks. Methods: associative, synectics	Predicting new pedagogical situations and solutions of corresponding didactic tasks	Individual and group creative projects within the apprenticeship
	Personal-acmeological component				
		Forming knowledge of actualization of creative potential	Principle of humanization of personal and professional development	Information on the fundamentals of acmeology, creative ontology and psychophysiology of creativity	Lectures, seminars, independent work
		Forming skills of searching for personal meanings	Principle of interconnection of rational and emotional types of thinking. Methods: associative, synectics	Analysis of the personal attitude to objects of prof.environment, searching for ways to humanize them	Business games, independent work, creative competitions
		Development of creative potential	Principle of relying on needs for self-development	Forecast of personal needs in developing the prof.environment	Associative-synectic game, individual projects
	Vocational pedagogical university students				

Figure 1. Model of learning and creative activity of vocational pedagogical university students:

- - learning component of the prof.-oriented learning and creative activity;
- ▨ - quasi-professional creative activity on rationalizing the objects of prof.environment;
- - prognostic-anticipatory quasi-professional creative activity

Stages of model implementation

Implementation of the model included the following stages of experimental work:

- studying the actual status and specifics of organization of the learning and creative activity of vocational pedagogical university students; empirical search for approaches, methods and means to activate the learning and creative activity,
- analyzing the variants of organizational-pedagogical support of the students' learning and creative activity, identifying in the process of developing their professional creativity three main components: professional-creative, professional-pedagogical and personal-acmeological,
- developing and implementing the scientific-methodological support materials that contribute to successful functioning of the structural model,
- determining the degree of development of abilities for professional creativity of future vocational training teachers.

Experimental and exploratory work

Experimental and exploratory work was carried out in the Russian State Vocational Pedagogical University. Some components of the structural model were tested within the process of organizing learning and creative activity of students of the Shadrinsk State Pedagogical Institute. 370 students of "Professional Education" (by industries) participated in the research.

Identifying three components in the structure of learning and creative activity of students required defining the composition and degree of personal development corresponding to these components, as well as abilities of a person characterizing the degree of development of the professionally-oriented learning and creative activity of future vocational training teachers. Based on the theoretically grounded approach to considering the professional-creative (PC), professional-pedagogical (PP) and personal-acmeological (PA) components of the professional creativity as relatively independent, though interconnected and interdependent, processes of creative activity, development of students' personalities in each of these processes can be characterized and measured using the creative ability model developed by V.I. Andreev (1998). So, in order to assess the degree of activating professionally-oriented learning and creative activity of students it was proposed to assess increment (positive shifts) in the degree of development of each student's abilities for creativity with respect to each of the identified components thereof.

According to the approach by V.I. Andreev (1998), the assessed abilities and qualities of developing personality were combined in six enlarged blocks: motivational-creative activity (MC), intellectual-logical (IL), intellectual-heuristic (IH) and communicative-creative (CC) abilities, as well as abilities for self-management (SM) in learning and creative activity and creative productivity (CP). The composition of assessed personality's traits in each block and assessment criteria were specified by expert evaluation method (taking into account the specific features of each identified components).

The group of 20 experts, selected on the basis of several requirements such as having an academic degree and (or) many-year experience of organizing learning and creative activity of students, participating in training of laureates and diploma winners of regional and state creative competitions, having publications on students' creativity development problems etc., discussed the problem of relevance of the identified personality traits for analyzing the activation of learning and creative activity.

The expert evaluation was performed at the seminar using the case study method. The conformity of experts' opinions was determined by calculating the agreement coefficient rwg for each of the qualities and their assessment criteria. The coefficient was calculated according to the following formula,

$$rwg = (\sigma_e^2 - Sx^2) / \sigma_e^2,$$

where σ_e^2 is dispersion of assessment in population (population dispersion),

Sx^2 is dispersion of assessment in experts' selection.

At that, $\sigma_e^2 = (A - 1) / 12$

A is the number of alternatives in the scale used for assessment,

$$Sx^2 = \sigma_x^2 * K / (K - 1),$$

Where K is the number of experts,

σ_x is standard deviation.

In this case rwg for various assessed qualities amounted to 0,8 – 0,9 which means high degree of agreement among the experts and gives the possibility to use the arithmetical average of the experts' assessments as the measure of distribution center.

Using the elaborated system of criteria the degree of development of each of the qualities was assessed. The basis for assessing the degree of development was a questionnaire with test and diagnostic tasks developed by V.I. Andreev (1998) and adapted to content of creativity in the identified components. The change of students' activity was assessed according to 10-point grading scale (0-9) at each of the identified stages of development: stage 1 – learning component, stage 2 – quasi-professional activity, stage 3 – prognostic-anticipatory quasi-professional creative activity.

The Sign test method was used for statistical processing of the received results which allowed us to identify significant differences between the data assessed at the start of each stage and at the end of the final stage 3. The following hypotheses were tested: Hypothesis 0 stated that data received at previous and next measurements do not have significant variations; opposite hypothesis 1 assumed significant difference between the data. The difference of the results (the shift) shows the direction of changes in development of assessed qualities. Assessment and shifts of assessment of the degree of development of abilities for professional creativity are shown in Table 1.

The results shown confirm the truth of assumptions $H1$ ($p \leq 0,01$) as all students showed the increase of degree of manifestation of the examined creative abilities and the productivity of professional creativity. Thus, the performed research allows us to state that executing the proposed complex of pedagogical conditions described in the structural model ensures activating the professionally-oriented learning and creative activity of vocational pedagogical university students in all the identified components.

Table 1. Average marks and shifts of assessment of degree of development of future vocational training teachers' abilities for professional creativity

Components of creativity	Quality blocks	Average marks and shifts of evaluations						
		Start of Stage 1	Start of Stage 2	Shift at Stage 1	Start of Stage 3	Shift at Stage 2	End of Stage 3	Shift at Stage 3
PC	MC	3,2	4,1	0,9	5,5	1,4	7,3	1,8
	IL	3,4	4,4	1,0	5,6	1,2	7,8	1,5
	IH	2,8	3,6	0,8	4,7	1,1	6,4	1,7
	SM	3,0	4,1	1,1	5,3	1,2	6,9	1,6
	CC	2,5	3,2	0,7	5,0	1,8	6,8	1,8
	CP	0,9	1,4	0,5	4,9	3,5	6,6	1,7
PP	MC	3,0	3,8	0,8	5,3	1,5	7,0	1,7
	IL	3,5	4,3	0,8	5,3	1,0	7,2	1,9
	IH	2,1	2,8	0,7	4,5	1,7	6,1	1,6
	SM	2,4	3,2	0,8	5,1	1,9	6,5	1,4
	CC	2,3	2,9	0,6	5,2	2,3	6,5	1,3
	CP	0,7	1,0	0,3	4,1	3,1	5,9	1,8
PA	MC	4,1	4,6	0,5	5,7	1,1	7,9	2,2
	IL	3,8	4,7	0,9	5,7	1,0	7,8	2,1
	IH	3,3	3,8	0,5	4,8	1,0	6,7	1,9
	SM	3,2	4,0	0,8	5,6	1,6	7,2	1,6
	CC	3,6	4,3	0,7	5,4	1,1	6,9	1,5
	CP	3,1	3,7	0,6	5,1	1,4	7,1	2,0

Note; typical shift is positive, no negative shifts.

Discussions

When analyzing psychological-pedagogical, scientific-methodological and special literature and generalizing the data on the problem of activating the professionally-oriented learning and creative activity, in many studies certain aspects of the professionally-oriented creativity are examined and described, yet no studies cover all the aspects of preparing a vocational training teacher for creative activity with reference to the three components. That is why, in developing the structural model, we drew upon the well-known and widely-tested approaches by A.A. Derkach (2013) in Acmeology required for developing the personal-acmeological component, studies by A.A. Zinovkina (2002) and S.A. Novoselov (2003) in developing the students' technical creativity for elaborating the professional-creative component, and studies by I.V. Osipova & O.V. Tarasyuk (2010; 2011) in pedagogical creativity for developing the professional-pedagogical component.

The work is widely based on the results of the studies on the problem of developing the individual creativity in educational process N.D. Nikandrov (1987), V.I. Zagvyazinsky (1987).

The main reference point in the process of solving the problem is the famous idea of A.A. Verbitsky (1991) that the strategic direction of activating education is not the increase of the volume of transferred information, nor its crunching or speeding up the reading process but creating pedagogical conditions for expanding the sense of purpose of studying. Students should be involved in learning activity at the level of both intellectual and personal and social activity.

In this case the learning activity process turns into personally-mediated process of interaction and communication of vocational education's subjects – teachers and students aimed at reaching the goal that unites them – forming the creative personality of the bachelor's degree holder.

Regarding the management of learning activity the rendering of activation proposed by N.D. Nikandrov (1987) proved to be quite fruitful for the research: on the assumption that learning and creative activity is the self-regulating activity of students in interaction with a teacher and proactive attitude is a property of this activity, then activation of the learning and creative activity means managing the proactive attitude, that is, its motivation, inclusion, making it reach a certain level and maintaining it there. In this case proactive attitude means the measure of intensity of the education subjects' interaction with each other and with objects of the educational environment.

The concept of search activity (Arshavsky & Rotenberg, 1984) has greatly influenced the research. Here we understand it as proactivity aimed at changing the situation or a person's attitude towards the situation without any specific prediction of such proactivity's results but with continuous control of the results at each stage of this proactivity. It is the search activity that is the mechanism of starting people's creative behavior.

Regarding the methodological aspect, the research of the essence of activating the learning and creative activity was greatly influenced by the provisions of creative ontology by A.I. Subetto (1992) that explain the multidirectionality of a person's creative activity and by cognitive-psychological schemes of the creative process development found by B.M. Kedrov (1987) that describe conditions and mechanisms of overcoming cognitive-psychological barriers in creative and learning and creative activity.

However, as shown by the analysis of scientific publications, the aspects of pedagogical support of directing the students' learning and creative activity towards the tasks of professional-pedagogical activity are not reflected in the results of researching the problem of activating the said activity. Thus, in the research this aspect is studied as a part of a wider problem of developing the students' professionally-oriented creativity and then as the specific component of the professional pedagogical education.

Conclusion

The performed experimental and exploratory work has proven the fruitfulness of using the identified pedagogical conditions of activating the professionally-oriented learning and creative activity of students on the basis of the elaborated structural-conceptual model that consists of interconnected components (creative, professional-pedagogical and personal-acmeological).

The results available from experimental and exploratory work, as well as identified conditions and proposed methods, means and organizational forms of activating the learning and creative activity of students of the vocational pedagogical university, associative-synecetic technique and study guides on its application can be included in the education practice of vocational pedagogical universities and pedagogical universities and colleges in Russia and abroad. Certain components of the elaborated technique can be used for developing creative abilities of students of all types and levels of educational institutions.

The results of the work have confirmed the necessity to further improve the associative-synecetic professional creativity development technique by actualizing its potential to improve the activity of students of vocational pedagogical university in all components of the learning and creative activity.

Disclosure statement

No potential conflict of interest was reported by the authors.

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